

REMARKS

This Response is filed in reply to the Office action dated January 12, 2006. Claims 1-30 are currently pending.

CLAIM REJECTIONS – 35 USC § 103

On pages 2-7 of the Office action, claims 1-15 of the present application are rejected under 35 USC §103(a) as being unpatentable over U.S. Patent Number 5,831,676 issued to Takahashi et al. (“Takahashi”) in view of U.S. Patent Number 5,943,094 issued to Sakai et al. (“Sakai”).

Claim 1 call for, among other things, “establishing a point at which a graph of input light intensity against camera output voltage starts to deviate from a substantially linear characteristic, hereinafter referred to as establishing the knee; and restricting the amount of light incident on all sensor elements of the camera such that the maximum output corresponds to a voltage at, or below, the knee. . . .”

Takahashi teaches “[a]n image pickup device capable of exposure control utilizing the iris aperture, shutter speed and gain as three control parameters.” *Takahashi*, Abstract. Takahashi further discloses “look-up tables (LUT) 19a, 19b storing various data for exposure control. . . . [A] table is provided for each of the phototaking modes . . . specifically, each table stores information on the control characteristics of the exposure control parameters such as the iris aperture, shutter speed and gain, corresponding to each of the plural phototaking modes, and the necessary data are read according to the selected phototaking mode.” *Id.* at col. 5, lines 17-29.

Takahashi also teaches that the aperture of the iris 2 controls “the amount of incident light” and that the aperture of the iris 2 is modified based on an exposure level determined by a control value defined by the LUT 19. *Id.* at col. 6, lines 30-47.

In addition, Takahashi teaches that “it is conceivable, . . . in response to the selected phototaking mode, to vary the non-linear conversion characteristic of the image signal level (knee characteristic or gamma characteristic) **in the camera signal processing circuit 6**, shown in FIG. 3, in a manner as indicated by a, b and c in FIG. 15, also to control the characteristics of an aperture correction circuit for

varying the image sharpness, and to add 'fading effect' or 'afterimage effect' to the image signal in the image signal processing circuit 7 as an additional image effect." *Id.* at col. 14, lines 5-15, emphasis added.

Takahashi, therefore, varies a non-linear conversion characteristic of the image signal level (knee characteristic or gamma characteristic) in a camera signal processing circuit 6. A image signal processing circuit 7 can also include an aperture correction circuit that varies images and adds effects. However, the aperture correction circuit is a signal processing circuit that is part of the image signal processing circuit 7 and does not have any impact on the light incident on the sensor elements. Takahashi does not **use teach, describe, or suggest any correlation between** the "knee characteristic" ~~in any way to modify and~~ the actual aperture of the iris 2 ~~to adjust the light incident on the sensor elements~~. Accordingly, Takahashi does not teach or suggest, among other things, "establishing a point at which a graph of input light intensity against camera output voltage starts to deviate from a substantially linear characteristic, hereinafter referred to as establishing the knee; and restricting the amount of light incident on all sensor elements of the camera such that the maximum output corresponds to a voltage at, or below, the knee," as claimed in claim 1.

Further, Takahashi teaches away from "restricting the amount of light incident on all sensor elements of the camera such that the maximum output corresponds to a voltage at, or below, the knee." Takahashi discloses a landscape photo taking mode.

FIG. 8 shows an example of the light metering areas suitable for 'landscape phototaking'. In landscape phototaking, the ground and the sky are generally included in the image frame at the same time, and the sky is usually much higher in luminance than the ground, even in somewhat cloudy weather. For this reason, in the conventional automatic exposure control without consideration of the photometry area, a person or other object in front of the sky or the ground often appears quite dark because of underexposure. In the present example, in order to avoid such drawback, the uppermost areas 1-6 corresponding to the sky in the image frame are practically disregarded by the assignment of a coefficient 0.0, while, in the central areas of the image frame, the upper part areas are given a coefficient of 0.5 and the lower part areas are given a coefficient of 1.0. Such assignment of the weighting coefficients enables the automatic exposure calculation with larger weight in the lower areas corresponding to the ground portion. *Id.* at col. 8, lines 28-46.

Therefore, Takahashi sets the aperture of the iris 2 based on the luminance of the lower third of the image frame and a reduced amount of the luminance of the middle third of the image frame, ignoring

the luminance of the upper third of the image frame. Since, as Takahashi states, the upper third of the image frame usually has a much higher luminance than the rest of the image frame, it would appear that the aperture of the iris 2 in the landscape mode is set such that the light incident on at least some of the sensor elements is above the knee.

Sakai fails to cure the deficiencies of Takahashi. Sakai teaches

[a]n image pickup device including: a solid state image pickup element; a memory; an image pickup data generating unit for generating image pickup data through an image pickup operation of reading data from the solid state image pickup element and A/D converting the data; a first processing unit for storing the image pickup data in the memory; a noise data generating unit for generating noise data through an operation, similar to the image pickup operation in a non-exposure state, of reading data from the solid state image pickup element and A/D converting the data; and a second processing unit for generating a desired image pickup data by subtracting an average data of a plurality of noise data obtained by a plurality of repetitive operations of the noise data generating unit, from the image pickup data stored in the memory means. *Sakai*, Abstract.

Accordingly, Sakai also fails to teach or suggest, among other things, “establishing a point at which a graph of input light intensity against camera output voltage starts to deviate from a substantially linear characteristic, hereinafter referred to as establishing the knee; and restricting the amount of light incident on all sensor elements of the camera such that the maximum output corresponds to a voltage at, or below, the knee,” as claimed in claim 1.

Neither Takahashi nor Sakai, either alone or in combination, teaches or suggests, among other things, “establishing a point at which a graph of input light intensity against camera output voltage starts to deviate from a substantially linear characteristic, hereinafter referred to as establishing the knee; and restricting the amount of light incident on all sensor elements of the camera such that the maximum output corresponds to a voltage at, or below, the knee,” as claimed in claim 1.

In addition, claim 1 calls for “establishing a camera offset by measuring or calculating the output voltage of the camera when substantially no light falls on any of its sensor elements, hereinafter referred to as establishing the offset.”

On page 3 of the Office action, the Examiner acknowledges that “Takahashi et al. does not disclose establishing a camera offset by measuring or calculating the output voltage of the camera when substantially no light falls on any of its sensor elements, hereinafter referred to as establishing

the offset” as called for in claim 1. However, Sakai again fails to cure the deficiencies of Takahashi. Sakai teaches

[d]ata read from the solid state image pickup element 3 is converted into digital data (image pickup data) by the A/D converter 4, the digital data being stored in the memory 8 when a switch SW-1 is turned to the A side by an instruction from the camera control circuit 10. Thereafter, the solid state image pickup element 3 is made active again while closing the shutter 2. An output of the solid state image pickup element 3 is A/D converted. This digital data is shifted to the lower digit by N bits determined by the camera control circuit 10. The sign of this shifted data is inverted by the sign inversion circuit 6, and the resulting data is added to an output of the memory 8 and stored in the memory 8 via the B contact of the switch SW-1 (i.e., an output of the memory 8 is subtracted by the shifted data). *Sakai*, col. 4, lines 22-38.

Sakai fails to teach “measuring or calculating the output voltage of the camera.” Instead, Sakai teaches converting data from the solid state image pickup into digital data. Digital data obtained in this manner when the shutter is closed is subtracted from a stored digital image. At no point does Sakai teach “establishing a camera offset by measuring or calculating the output voltage of the camera when substantially no light falls on any of its sensor elements, hereinafter referred to as establishing the offset,” as claimed in claim 1.

Accordingly, neither Takahashi nor Sakai, either alone or in combination, teaches or suggests, among other things “establishing a camera offset by measuring or calculating the output voltage of the camera when substantially no light falls on any of its sensor elements, hereinafter referred to as establishing the offset,” as claimed in claim 1.

Withdrawal of the 35 USC §103(a) rejection of claim 1 is respectfully requested. Claims 2-15 are each ultimately dependent upon claim 1, and are allowable based upon claim 1 and upon other features and elements claimed in claims 2-15 but not discussed herein.

Also, the Applicant respectfully traverses the statement on page 5 of the Office action that “both the concepts and advantages of providing a white reference representing know[n] maximum light (saturation) in the image field via a white reference tile are well known and expected in the art.” Neither Takahashi nor Sakai teach this subject matter. To the extent that this position is relied upon by the Examiner, the Applicants respectfully request that the Examiner provide a specific prior art reference that teaches this subject matter.

In view of the amendments and remarks presented herein, it is respectfully submitted that Claims 1-15 are in condition for allowance. The Applicant requests that the Examiner telephone the attorneys of record in the event a telephone discussion would be helpful in advancing the prosecution of the present application.

Respectfully submitted,



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